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Research Article

A retrospective study of clinical profile of stroke patients from GMERS Medical College and Hospital, Gandhinagar, Gujarat

Chirayu V. Vaidya[1]*, Drusty K. Majmudar[2]

[1]Department of Medicine, GMERS Medical College and Hospital, Gandhinagar-382012, Gujarat, India
[2]Department of Radiodiagnosis, AMC MET Medical College, Ahmedabad-380008, Gujarat, India

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***Correspondence:**
Dr. Chirayu V. Vaidya,
E-mail: drchirayuvaidya@gmail.com

ABSTRACT

Background: The cerebrovascular stroke is one of the leading causes of morbidity & mortality in adult life. After coronary heart disease & cancer of all types, stroke is the third commonest cause of death worldwide. Indian studies have shown a stroke prevalence of 471.58/100000 population. The objective was to study the clinical presentation, risk factors, neurological presentation, pattern of brain strokes, areas of brain affected as per CT scan findings in pts GMERS medical college and hospital Gandhinagar.
Methods: This is a retrospective study of all new patients managed for stroke in the medical ward of GMERS medical college and hospital, Gandhinagar, Gujarat from January1, 2012 to December 31, 2013.
Results: The cerebrovascular strokes are more common in males (59.7%) than females (40.3%). Most common age group was 61-70 years (32.8%). Most common clinical feature was hemiplegia (72.6%). Most common risk factor was Hypertension (34%) followed by past h/o cerebrovascular stroke (15%), smoking (14%), dyslipidemia (13%). Most common type of stroke was ischemic (74.6%) & hemorrhagic was 2nd (22.9%). In ischemic stroke most common involved areas were parietal (33.7%), frontal (16.7%). In hemorrhagic stroke most common site was thalamus (24.7%) followed by ventricular (17.5%).
Conclusions: The cerebrovascular stroke cases were having male predominance with Hypertension was the most common risk factor and most common type of stroke was ischemic.

Keywords: Cerebrovascular stroke, Ischemic stroke, Hemorrhagic stroke

INTRODUCTION

Stroke is a devastating and disabling cerebrovascular disease with significant amount of residual deficit leading on to economic loss. It has been defined as a rapidly developing signs of focal (or global) disturbance of cerebral function with symptoms lasting for ≥24 hours, or leading to death with no apparent cause other than vascular origin.[1] It is a collection of clinical syndromes resulting from cerebral ischemia to intracranial hemorrhage. In the west, it is the 3rd most common cause of morbidity and mortality.[2]

Some of the recent studies have elucidated the stroke pattern to considerable extent in our country with a prevalence rate o471.58/100000 population.[3] Recent study identified that 7% of medical and 45% of neurological admissions were due to stroke with a fatality rate of 9% at hospital discharge and 20% at 28 days.[4] Hypertension, alcoholism, smoking & dyslipidemia are commonest cause of stroke among the elderly,[5] and smoking, alcoholism, increased BMI, diabetes and hypertension are significantly associated with strokes among young people.[6]

Ischemic strokes account for 50%-85% of all strokes worldwide.[7] Hemorrhagic strokes are due to subarachnoid hemorrhage or intracerebral hemorrhage, they account for 1%-7% and 7%-27% respectively of all strokes worldwide.[7]

The Indian national commission on macro-economics and health estimated that the number of strokes will increase from 1081480 in 2000 to 1667372 in 2015.[8] The global burden of disease Study projects that total deaths from stroke in India will surpass established market economies by year 2020. Hence this study was undertaken in our set up to study various aspects of stroke which will help young physicians to deal with this deadly & disabling disease.

METHODS

This is a retrospective study of 238 cases managed for stroke in the medical ward of GMERS medical college and government hospital Gandhinagar, Gujarat from January 1, 2012 to December 31, 2013. The case notes of the pts were retrieved from the medical department of the hospital and relevant data extracted and analyzed. We have only CT scan machine in house, for MRI we have to send pts to higher centers.

Inclusion criteria

1) All pts above age 18 yrs & having clinical & CT confirmed diagnosis of stoke.

Exclusion criteria

1) Pts below 18.

2) Stroke due to trauma.

3) Pts' medical records which were not showing CT confirmed diagnosis.

4) Medical records in which pt sent for MRI brain with inconclusive CT scan findings.

The data obtained were analyzed using SPSS version 21.0 software. Results were expressed in frequencies and percentages.

RESULTS

238 cases of stroke case records managed in medical ward of GMERS medical college and government hospital, Gandhinagar during a period of 1st January 2012 to 31st December 2013 were studied & evaluated for clinical profile & frequency of risk factors.

Incidence of age

The age range was from 26 years to 100 years with mean age of 61 years. In this study youngest pt was 26 years & oldest was 100 years old. The incidence of stroke is maximum in the age group of 61-70 years which comprises of 32.8% of total pts, as shown in Table 1. Young stroke (age ≤45 years) comprised of 15% of all pts.

Table 1: Frequency & percentage of cases according to age groups.

Age groups (years)	Frequency	Percent
20-30	2	8%
31-40	18	7.6%
41-50	41	17.2%
51-60	53	22.3%
61-70	78	32.8%
71-80	35	14.7%
81-90	7	2.9%
91-100	4	1.7%
Total	238	100%

Sex distribution of stoke pts

Out of 238 pts, 142 were males & 96 were females as shown in Table 2.

The male to female ratio was 1.4:1.

From above observation it can be concluded that incidence of stroke is more common in male sex.

Table 2: Sex wise distribution of stoke cases.

Sex	Frequency	Percent
Female	96	40.3%
Male	142	59.7%
Total	238	100.0%

Clinical presentation of stroke pts

In our study as shown in Table 3, most common clinical presentation was hemiplegia which was 48% followed by speech involvement (25.1%), altered sensorium (13.1%), convulsions (5%), instability of gait (3.9%), vomiting (3.1%) & headache (3.1%).

Table 3: Frequency and percentage of clinical features of stroke patients.

Clinical features	Frequency	Percent
Altered sensorium	47	13.1%
Instability of gait	14	3.9%
Convulsions	18	5%
Speech involvement	90	25.1%
Headache	6	1.7%
Vomiting	11	3.1%
Hemiplegia	172	48%

Prevalence of risk factors in stroke pts

In our study most common risk factor was hypertension with 34.1% incidence. it followed by previous H/o cerebrovascular accident 15%, smoking 14.2%, dyslipidemia 13.4%, diabetes mellitus 9.3%, alcohol 7.9%, H/o previous coronary artery disease 4.9%, 2 pts had past H/o of malignancy & 1 pt was having rheumatic valvular disease, as shown in Table 4.

Table 4: Frequency and percentage of stroke risk factors.

Risk factors	Frequency	Percent
HT	84	34.1%
DM	23	9.3%
Past H/o CAD	12	4.9%
Dyslipidemia	33	13.4%
Alcohol	19	7.7%
Smoking	35	14.2%
RHD with valvular disease	1	0.4%
Past H/o CVD	37	15%
H/o cancer	2	0.8%

Type of stroke

In our study as shown in Table 5, 178 pts (74.8%) suffered ischemic stroke & 54 pts (22.7%) suffered hemorrhagic stroke followed by 6 pts (2.5%) were due to some primary brain malignancy or secondaries in brain. So most common type of stroke was ischemic that is cerebral infarction. Out of 178 ischemic stroke pt 111 (46.8%) were males & 67 (28.3%) were females.

Second most common type of stroke was hemorrhagic (22.7%). Out of 54 hemorrhagic stroke pts 27 (11.4%) were males & same numbers were females.

Stroke due to space occupying lesion either due to primary brain malignancy or secondaries in brain was 2.5%.

Topographic distribution of hemorrhage

In our study most common site of hemorrhage was thalamus (24.7%) followed by ventricular (17.5%) & basal ganglia (13.4%), as shown in Table 6.

Table 5: Gender wise frequencies of different types of stroke.

Gender		Type of stroke			Total
		Ischemic stroke	Hemorrhagic stroke	Stroke due to primary brain malignancy or secondaries in brain	
Female	Count	67	27	2	96
	Percent	28.3%	11.4%	0.8%	40.1%
Male	Count	111	27	4	142
	Percent	46.8%	11.4%	1.7%	59.9%
Total	Count	178	54	6	238
	Percent	75.1%	22.8%	2.5%	100%

Table 6: Topographic distribution of cerebral hemorrhage & infarct.

Affected areas of brain on CT scan brain	Cerebral hemorrhage		Cerebral Infarct	
	Frequency	Percent	Frequency	Percent
Pons	3	3.1%	2	0.7%
Midbrain	2	2.1%	2	0.7%
Thalamus	24	24.7%	4	1.3%
Basal ganglia	13	13.4%	32	10.5%
Centrum semiovale	7	7.2%	5	1.6%
Paraventricular	2	2.1%	14	4.6%
Ventricular	17	17.5%	--	--
External capsule	1	1%	12	3.9%
Internal capsule	5	5.2%	7	2.3%
Lentiform nucleus	1	1%	1	0.3%
Cerebellar	2	2.1%	11	3.6%
Frontal	5	5.2%	51	16.7%
Parietal	12	12.4%	103	33.7%
Temporal	3	3.1%	24	7.8%
Occipital	-	-	24	7.8%
Caudate nucleus	-	-	11	3.6%
Medulla oblongata	-	--	3	1%

Topographic distribution of infarct

In our study most common site of infarct was parietal (33.7%), followed by frontal (16.7%) followed by basal ganglia (10.5%), as shown in Table 6.

Thus findings were favoring middle cerebral artery territory involvement.

DISCUSSION

The mean age observation of 61 in our study which correlates with study done by Maskey et al.[9] (mean age 63) & Awad SM et al.[10] (mean age 63.66). The common age group involved was between 61-70 years which closely correlates with study done by Ukoha Ob et al.[11] & Maskey et al.[9]

Young stroke (age ≤45 years) comprised of 15% of all pts witch closely correlates with study done by Abdu Sallam et al.[16] (13.6%), Gauri et al.[12] (19%), P. Chitrambalam et al.[13] (20%).

The male to female ratio was 1.4:1. Which correlates with study of Aiyar et al.[14] (1.9:1). So it can be concluded that incidence of stroke is more common in male sex which correlates with study done by Aiyar et al,[14] Pinhero et al.,[15] Eapen et al.[5]

In our study most common clinical presentation was hemiplegia which was followed by speech involvement. This observation closely correlates with the study done by P. Chitrambalam et al.,[13] in which most common was hemiplegia (in <45 years 93.3%, in >45 years 89.2%) followed by speech involvement (in <45 years 43.3%, in >45 years 30.8%).

In our study most common risk factor was hypertension was the commonest risk factor which correlates with the study done by Eapen et al.,[5] (40%), Abdu-Alrhaman Sallam et al.[16] (67%). H/o past cerebrovascular accident accounted for 15% which correlated with study done by Ukoha Ob et al.[11] (16.2%) & by Abdu-Alrhaman Sallam et al.[16] (12.2%). In our study percentage of smoking & alcohol were less as compared to other studies. The likely explanation is this being a retrospective study in few case histories those data was not filled properly by emergency duty doctors attending those pts.

In our study dyslipidemia was 13.4% which was correlating with study done by Eapen et al. (17%),[5] Abdu-Alrhaman Sallam et al. (13.9%).[16] In our study diabetes pts were 9.3% which correlates with study done by Maskey et al. (9.3%)[9], Gauri et al. (9%)[12] and Eapen et al. (8%).[5] In our study pts with previous H/o coronary artery disease were 4.9% which co related with study done by Kaur et al. (6%)[17] and Eapen et al. (9%).[5]

In our study most common type of stroke was ischemic that is cerebral infarction (74.8%) which correlated with studies done by Aiyar et al.[14] in which infarction was in 70%, in Eapen et al.[5] 68% and in Devichand et al. (75%).[18]

Second most common type of stroke was hemorrhagic (22.7%) which correlated with study done by Eapen et al.[5] (32%), Aiyar et al.[14] (26%), Devichand et al. (25%).[18] Stroke due to space occupying lesion either due to primary brain malignancy or secondaries in brain was 2.5% which correlated with study by Aiyar et al. (4%).[14]

In our study most common site of hemorrhage was thalamus (24.7%) followed by ventricular (17.5%) & basal ganglia (13.4%). This findings correlates with study done by Eapen et al.[5] and Aiyer et al.[14] where it has been concluded that in multiple hematoma sites most common was thalamic ganglionic region.

In our study most common site of infarct was parietal (33.7%), followed by frontal (16.7%) followed by basal ganglia (10.5%). This observation was consistent with study done by Eapen et al.,[5] in which most common site was parietal (56%) followed by basal ganglia & frontal. These findings were favoring middle cerebral artery territory; this was also confirmed in study done by Devichand et al. and Caroli et al.[18]

CONCLUSION

To conclude stroke in our county is on rise. The occurrence rises with age with peak between 60 to 70 years. Young pts (age ≤45 years) were 15% of pts which is more dangerous in view of productive year lost. This study showed male predominance in stroke cases. Cerebral infarction was more than hemorrhage. Males were more affected than females in ischemic stroke but for hemorrhage, incidence was equal. Hypertension was amongst leading risk factors for both types. After hypertension previous H/o CVA, smoking, dyslipidemia, DM & alcohol intake & previous H/o CVA were amongst leading risk factors, they were more prevalent in ischemic stroke. Most common clinical presentation was hemiplegia followed by speech involvement. In cerebral infarction most common site was parietal followed by frontal, basal ganglia, temporal & occipital. In hemorrhage most common site was thalamus followed by ventricular, basal ganglia & parietal.

We need holistic approach & more research to combat this deadly & disabling disease.

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